

LISTING OF THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously presented) A process for coating a substrate with a functional layer, comprising the steps of:
 - providing the substrate and a layer starting material in a vacuum system;
 - sputtering the layer starting material on the substrate to define a first portion of the functional layer;
 - interrupting the sputtering at least once to produce an intermediate layer on the first portion, the intermediate layer being different than the functional layer and having a thickness of less than or equal to 20 nm; and
 - continuing sputtering the layer starting material after the intermediate layer is produced to define a second portion of the functional layer, wherein the intermediate layer is sufficient to increase the transmittance and/or reflectance of the functional layer.
2. (Previously presented) The process for coating a substrate as claimed in claim 1, wherein the sputtering comprises magnetron sputtering of the layer starting material.
3. (Cancelled)
4. (Previously presented) The process for coating a substrate as claimed in claim 1, further comprising repeating the sputtering, interrupting, and continuing steps so that a plurality of functional layers are applied as an alternating layer system comprising a first functional layer with a low refractive index and a second functional layer with a high refractive index.

5. (Previously presented) The process for coating a substrate as claimed in claim 4, wherein the first functional layer has a first intermediate layer with a high refractive index and/or the second functional layer has a second intermediate layer with a low refractive index.

6. (Previously presented) The process for coating a substrate as claimed in claim 5, wherein the first functional layer and the second intermediate layer consist of SiO_2 by virtue of silicon being sputtered in a reactive atmosphere, and the second functional layer and the first intermediate layer consist of ZrO_2 by virtue of zirconium being sputtered in a reactive atmosphere.

7. (Previously presented) The process for coating a substrate as claimed in claim 1, wherein the layer starting material comprises a pure metal target.

8. (Previously presented) The process for coating a substrate as claimed in claim 7, wherein the interrupting step comprises introducing an oxygen-rich microwave plasma into the vacuum chamber so that a surface of the first portion of the functional layer is oxidized.

9. (Previously presented) The process for coating a substrate as claimed in claim 8, wherein the pure metal target comprises chromium.

10. (Previously presented) The process for coating a substrate as claimed in claim 1, further comprising locating a plurality of substrates on a drum inside the vacuum chamber and rotating the drum so that the plurality of substrates rotate past a plurality of targets comprising the layer starting material and an oxygen source.

11. (Previously presented) A coated substrate comprising:
at least one functional layer of a metal; and
at least one intermediate layer of a metal oxide which interrupts the at least one functional layer and has a thickness that is less than or equal to 10 nm.

12. (Previously presented) The coated substrate as claimed in claim 11, wherein the at least one functional layer is a chromium layer.

13. (Previously presented) The coated substrate as claimed in claim 12, wherein the at least one intermediate layer is at least one chromium oxide layer.

14. (Cancelled)

15. (Previously presented) The coated substrate as claimed in claim 11, wherein the coated substrate is used as a substrate for lithographic processes.

16. (Previously presented) A coated substrate comprising:
at least one functional layer of a metal oxide; and
at least one intermediate layer of a metal oxide which interrupts the at least one functional layer and remains below a thickness at which the at least one intermediate layer is optically active.

17. (Previously presented) The coated substrate as claimed in claim 16, wherein the at least one functional layer comprises an alternating layer system made up of a first functional layer with a high refractive index and a second functional layer with a low refractive index.

18. (Previously presented) The coated substrate as claimed in claim 17, wherein the second functional layer is formed from SiO_2 and the first functional layer is formed from ZrO_2 .

19. (Previously presented) The coated substrate as claimed in claim 18, wherein the at least one intermediate layer in the first functional layer has a low refractive index formed from SiO_2 , and the at least one interrupting intermediate layer in the second functional layer has a high refractive index formed from ZrO_2 .

20. (Cancelled)

21. (Previously presented) The coated substrate as claimed in claim 16, wherein the coated substrate is used as an optical element.

22. (Previously presented) The coated substrate as claimed in claim 21, wherein the optical element is a color filter.

23. (Previously presented) The coated substrate as claimed in claim 16, wherein the at least one functional layer is an optical functional layer.

24. (Previously presented) The process for coating a substrate as claimed in claim 5, wherein the first and second intermediate layers have a thickness of less than or equal to 10 nm.